US009460865B2

(12) **United States Patent**
Worsley et al.

(10) **Patent No.: US 9,460,865 B2**
(45) **Date of Patent: *Oct. 4, 2016**

(54) **MECHANICALLY ROBUST, ELECTRICALLY CONDUCTIVE ULTRALOW-DENSITY CARBON NANOTUBE-BASED AEROGELS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **15/152,801**

(22) Filed: **May 12, 2016**

(65) **Prior Publication Data**

US 2016/0260550 A1 Sep. 8, 2016

Related U.S. Application Data

(60) Continuation of application No. 14/179,271, filed on Feb. 12, 2014, now Pat. No. 9,384,870, which is a division of application No. 12/652,616, filed on Jan. 5, 2010, now Pat. No. 8,685,287.

(60) Provisional application No. 61/147,694, filed on Jan. 27, 2009.

(51) **Int. Cl.**

H01B 1/06	(2006.01)
H01B 1/24	(2006.01)

(Continued)

(52) **U.S. Cl.**

CPC ***H01G 11/56*** (2013.01); ***H01G 11/26*** (2013.01); ***H01G 11/36*** (2013.01); ***H01G 11/38*** (2013.01);

(Continued)

(58) **Field of Classification Search**

USPC 252/500, 502, 510; 977/742, 752, 932

See application file for complete search history.

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(57) **ABSTRACT**

Disclosed here is a device comprising a porous carbon aerogel or composite thereof as an energy storage material, catalyst support, sensor or adsorbent, wherein the porous carbon aerogel comprises a network of interconnected struts comprising carbon nanotube bundles covalently crosslinked by graphitic carbon nanoparticles, wherein the carbon nanotubes account for 5 to 95 wt. % of the aerogel and the graphitic carbon nanoparticles account for 5 to 95 wt. % of the aerogel, and wherein the aerogel has an electrical conductivity of at least 10 S/m and is capable of withstanding strains of more than 10% before fracture.

20 Claims, 10 Drawing Sheets